

A New Aploactinid Fish of the Genus *Kanekonia* from Indonesia and Redescription of *K. florida*

Stuart G. Poss

(Received April 21, 1981)

Abstract *Kanekonia pelta*, a new aploactinid taken from off Halmahera I., Indonesia in a bottom trawl at a depth of 46~55 m, is described and figured from a single specimen 28.5 mm in standard length. This species differs from *K. florida* in having more sculptured head bones and blunter spines. It differs from *K. queenslandica* in having the interorbital ridges thin and more nearly parallel, 26 vertebrae, a more slender body, and the dorsal border of the opercle less inclined. It differs from both species in having a rounded head profile, notably sculptured frontal ridges, and a more incised dorsal fin membrane. *K. florida* is redescribed, including 27 additional specimens.

Tanaka (1915) erected the genus *Kanekonia* on the basis of a single specimen collected in the vicinity of Nagasaki, Japan. He named this species *K. florida*. Whitley (1952) described a second species, *K. queenslandica* from Albany Passage in Australia, also on the basis of a single specimen. There have been only a few captures of individuals of this extremely rare group of scorpaenoid fishes. On the basis of Tanaka's description Matsubara (1943) placed *Kanekonia* questionably in his scorpaenid subfamily Congiopinae, excluding the genus from the aploactinid fishes. He later recognized the family Congiopodidae (Matsubara, 1955) and again briefly characterized *K. florida*. Thompson (1967), presumably misled by the brevity of the original descriptions and the lack of comparative materials, described another species, also from Queensland, as belonging to *Kanekonia*. However, I have examined the holotype of Thompson's *K. aniana*, a species with more pungent head spines, and refer it to the genus *Erisphex*.

In continuing studies on aploactinid fishes (Poss, in preparation) a specimen of an undescribed species referable to *Kanekonia* was discovered among scorpaenoid materials shipped from the Smithsonian Oceanographic Sorting Center to the California Academy of Sciences. Extensive searching has failed to turn up additional specimens. *K. pelta* is described here as new to facilitate future studies of this rare genus, because it is likely that additional speci-

mens may not be forthcoming for some time, and because important materials of the herein redescribed *K. florida* have recently discovered.

Methods

Methods for taking counts and measurements follow those of Eschmeyer (1969) as modified by Poss and Eschmeyer (1978). The lengths of the preorbital spines are measured from the anteroventral corner of the lachrymal bone (infraorbital 1) to the tips of the spines. Median fin ray counts were checked against radiographs. Abbreviations of depositories of materials examined are CAS—California Academy of Sciences, San Francisco; FAKU—Department of Fisheries, Faculty of Agriculture, Kyoto University; BSKU—Kochi University; UMMZ—University of Michigan, Museum of Zoology; USNM—United States National Museum of Natural History, Washington, D.C.; ZMK—Zoologisches Museum Kobenhaven; ZUMT—Department of Zoology, University Museum, University of Tokyo.

Kanekonia pelta, sp. nov.

(Figs. 1, 2)

Holotype. USNM 227361, 28.5 mm in standard length (SL), Indonesia, Halmahera, off Teluk Kau on sill outside of terminal basin (1°8.6'N, 128°01'E) at a depth of 46~55 m, 6-ft. beam trawl on bottom, Te Vega Exped. Cr. 1, Sta. 54, R. Bolin and party, 25 Sept. 1963.

Diagnosis. A species of *Kanekonia* with 1)



Fig. 1. Interorbital region of *Kanekonia pelta* (holotype, 28.5 mm SL).

dorsal profile of head gently rounded, 2) interorbital ridges thin, markedly sculptured, curved, and more widely spaced, and 3) infraorbital bones more strongly sculptured.

Description. Dorsal XII, 9; anal I, 9; pectoral 14; pelvic I, 2; vertebrae 26.

Head with papillae on cheek and opercle; few behind eye, none in interorbit, those on snout minute. Dorsal profile of head rounded, convex upward. Lachrymal bone (infraorbital 1) somewhat movable, large, broad, and sculptured, with 2 blunt preorbital spines on ventral border that are broadly connected by a ridge (less so on

right side). Second infraorbital bone broad, sculptured, with small knob-like spine. Third infraorbital bone expanded, strongly sculptured, its spine a low knob. Infraorbital (suborbital) stay broadly and firmly attached to preopercle. Single small postorbital bone. Interorbital ridges converging posteriorly, weakly raised but notably sculptured; space between ridges narrow, slightly pandurate (Fig. 1). Anterior nostril tubed, midway between eye and tip of snout. Nasal bone a somewhat flattened tube. Lateral-line pores of head small to moderate. Preopercle with 4 blunt, rugose spines: first largest, points directly back; second through fourth smaller, decreasing in size ventrally. Opercle with 2 slight ridges, upper ends in a small blunt spine; dorsal margin inclined about 15° above horizontal. Interopercle without spine. Parietal spine a large, low, sculptured knob. Pterotic spine a striated blunt ridge. Posttemporal spine a large, blunt knob. Supracleithral spine a blunt, striated ridge. Cleithrum without spine. Ventral margin of dentary strongly projects medially; symphyseal knob almost absent. Mandibular pores of moderate size, 4 on each side. Angular bone juts ventrally. Mouth strongly upturned. Maxilla extends almost to level of anterior margin of orbit; skin fleshy distally, but without distinct cirrus. Teeth on vomer; none on palatines. Gill rakers short, 6~7 total, 1 on upper arch, 5~6 on lower arch. No slit behind last hemibranch.

Body slender (greatest body depth 3.2 in SL);

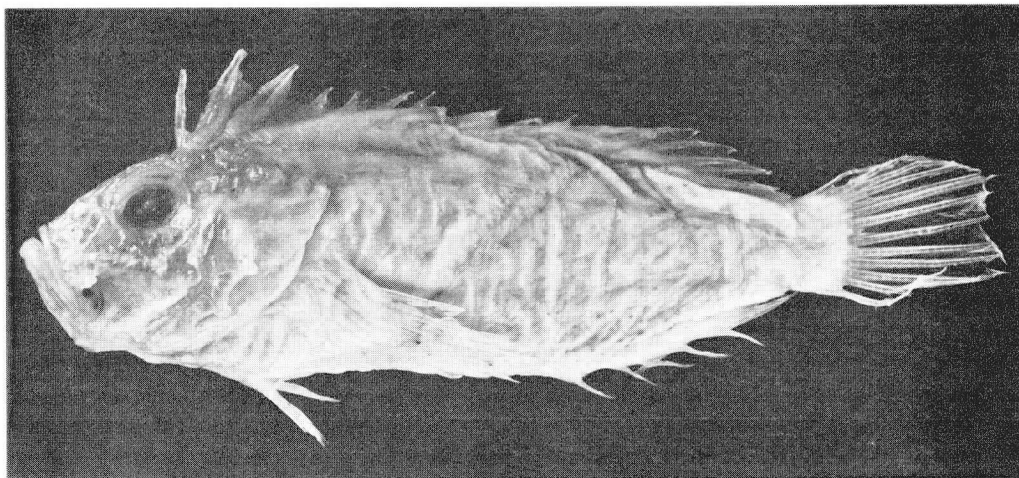


Fig. 2. Lateral view of *Kanekonia pelta* (holotype, 28.5 mm SL).

sparsely covered anteriorly with highly modified and reduced scales, each enveloped in a soft papilla, fewer posteriorly. Lateral line not high on body, with 11~12 tubed scales, last on caudal fin. Prickles on first 2 lateral line scales only.

Dorsal fin originates over posterior border of eye, first 2 dorsal spines close together; third and succeeding spines diminish in length posteriorly, second spine longest, second and third spines especially blunt. Dorsal fin membrane at fourth dorsal spine moderately incised. Pectoral rays 14, longest (4 or 5 from above) reaches base of second anal soft ray. All fin rays unbranched. Pelvic fin insertion at base of pectoral fin. Pelvic fin membrane not adnate to body. Caudal fin semilunate with 15 total (8 upper+7 lower) fin ray elements. Caudal skeleton with parhypural and hypurals 1 and 2 fused, hypurals 3 and 4 fused, hypural 5 autogenous; 2 epurals; preural neural spine long.

Color in life unknown. Color pattern in 70% ethanol faint (Fig. 2). Body color light brown. A diffuse dusky band on body above lateral line anteriorly, fading posteriorly. Body nearly devoid of color below lateral line except for a few diffuse spots immediately behind opercle and minute dark specks above and behind pectoral fin. Dorsal fin slightly darker than upper part of body, particularly anteriorly with perhaps hint of banding. Faint dark patches on pectoral fin base, with spotting distally and perhaps banded at midlength. Head with diffuse bars radiating from orbit, with faint patches over infraorbitals and cheek, very diffuse specks over interorbit, snout, and lower jaw. Diffuse dark patches on opercle and in region of posterior head spines.

Measurements of the holotype in mm are as follows (percent of SL in parentheses): Standard length 28.5. Head 10.6(37). Snout 2.9(10). Orbit 2.8(9). Interorbit 2.5(9). Upper jaw 4.4(15). Postorbital 5.2(17). Greatest body depth 8.9(31). Anal fin (base of first spine to end of longest ray) 10.4(36). Caudal fin 7.7(27). Pectoral fin (base of uppermost ray to end of fin) 9.5(33). Pelvic fin 4.0(14). Dorsal spine lengths: first 3.3(12); second 4.3(15); third 4.1(14); fourth 2.2(8); fifth 1.9(7); penultimate 2.0(7); last 2.0(7). Anal spine 0.7(2). Width between interorbital ridges 0.7(2). Least depth of caudal

peduncle 3.0(10). Distance from tip of snout to first dorsal spine (predorsal) 5.4(19); to second dorsal spine 6.3(22); to third dorsal spine 7.9(28); to fourth dorsal spine 9.6(34); to fifth dorsal spine 10.9(38). Distance from tip of snout to pelvic origin 9.2(32). Transverse width of first dorsal spine at midlength 0.3(1). Incision of fin membrane at fourth dorsal spine (from tip to membrane) 0.5(2). Distance from tip of operculum to dorsal base 3.1(11). Length of uppermost preopercular spine 2.1(7); of anterior preorbital spine 2.7(9); of posterior perorbital spine 2.8(10).

Comparisons. *Kanekonia pelta* is most similar to *K. florida*, but differs, in having a distinct interorbit, more sculptured head bones, and blunter spines. It differs from *K. queenslandica* in having the interorbital ridges thin and more nearly parallel, 26 vertebrae (25 in *K. queenslandica*), a more slender body, and the dorsal edge of the operculum less inclined (about 15° as opposed to 35° above horizontal). It differs from both species in having the dorsal profile of the head gently rounded rather than sharply inclined or angular, a more incised dorsal-fin membrane, and a distinct pattern of sculpturing of the head bones, particularly in the interorbit.

Etymology. The name is derived from the Latin *pelta* (a small shield) in reference to the distinctive shape of the first infraorbital bone. It is treated as a noun in apposition.

***Kanekonia florida* Tanaka, 1915**
(Figs. 3, 4)

Kanekonia florida Tanaka, 1915: 566 (original description; type-locality Nagasaki). Tanaka, 1918: 510, pl. 136, fig. 380 (redescription based on holotype). Tanaka, 1931: 36 (listed). Matsubara, 1943: 456 (in Congiopinae, no specimens). Whitley, 1952: 30 (description compared with *K. queenslandica*). Matsubara, 1955: 1094, 1906 (in key, brief summary based on original description). Kamohara, 1961: 6 (Urado, Kochi City). Kamohara, 1964: 75 (listed). Thompson, 1967: 147 (description compared with *K. aniara*).

Materials. ZUMT 6544 (1, 32.3 mm SL), Holotype, Vicinity of Nagasaki, Nagasaki fish market, I. Kaneko, no other data; CAS 48230 (1, 22.3) from FAKU 50407; FAKU 50057 (1, 24.3) Nagasaki Prefecture, Shijiki Bay,

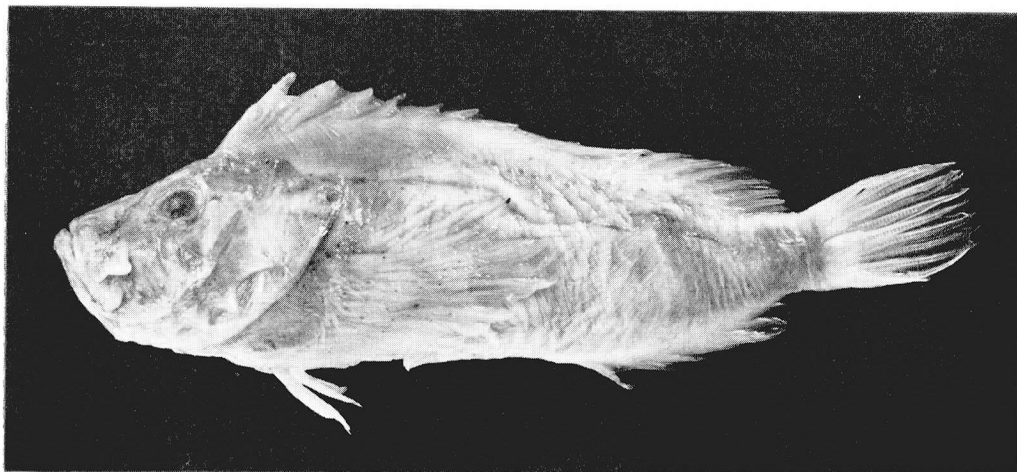


Fig. 3. Lateral view of *Kanekonia florida* (UMMZ 202411, 45.7 mm SL).

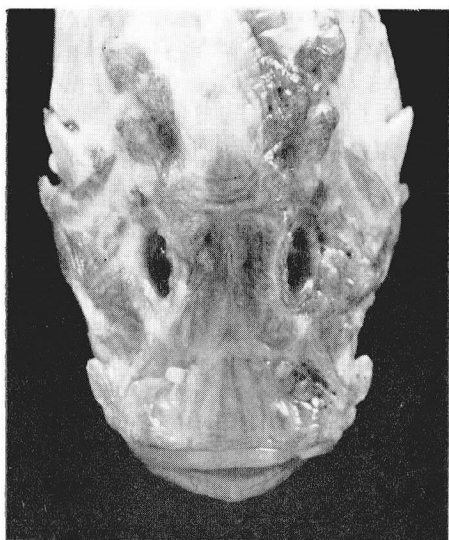


Fig. 4. Interorbital region of *Kanekonia florida* (UMMZ 202411, 45.7 mm SL).

Hirado Is., 30 m, sandy bottom, T. Nakabo, 18 June 1976; FAKU 50058 (1, 25.6) Hirado Is., 30 m, sandy bottom, T. Nakabo, 29 June 1975; FAKU 50059 (5, 12.2~21.7) Hirado Is., 30 m, sandy bottom, T. Nakabo, 27 Oct. 1975; FAKU 50060 (1, 15.4) Hirado Is., 20 m, sandy bottom, T. Nakabo, 24 Jan. 1976; FAKU 50407 (7, 19.1~26.2) Nagasaki Prefecture, Shijiki Bay, Hirado Is., 30 m, sandy bottom, small beam trawl, T. Nakabo, night, 23 July 1980; BSKU 1947 (1, 30.3) Urado, Kochi City, 15 Aug. 1951; UMMZ 202411 (1, 45.7) Vicinity of Nagasaki,

from coll. of Mr. Kaneko, no other data; UMMZ 1942040 (3, 25.7~30.2); Vicinity of Nagasaki, Nagasaki fish market, Hubbs and Hiraiwa, 16 July 1929; UMMZ 207677 (2, 26.2~27.7) and 207677 (1, 24.5, cleared and alizarin stained) from FAKU 50407; ZMK P7965-66 (2, 16.8~24.4) Hirado Is., fishing boats, 29 Nov. 1911; ZUMT 6375 (2, 23.1~32.7) Vicinity of Nagasaki, Nagasaki fish market (see remarks below).

Diagnosis. A species of *Kanekonia* with narrowly separated and nearly parallel interorbital ridges lacking prominent sculpturing.

Description (holotype indicated by asterisk). Dorsal XI, 9 (1 specimen), XII, 8(2), XII, 9*(15), XII, 10(4), XIII, 8(5), or XIII, 9(2); anal I, 8(11), I, 9*(17), or II, 8(1); pectoral 13(1), 14(1), 15*(24), 16(3); pelvic I, 2(28) or I, 1(1); vertebrae 25(7) or 26*(21).

Head with papillae on cheek, preopercle, and opercle; none just behind eye or in interorbit; those on snout absent or minute. Dorsal profile of head sloping at about 40 to 45° from horizontal, not rounded. Lacrymal bone (infraorbital 1) movable with 2 blunt spines, first smaller, directed down over maxilla, second larger, directed down and back (a slight spine on anterodorsal border of bone in some specimens). Second infraorbital bone broad, with a knob-like spine. Third infraorbital bone expanded, with some sculpturing; its spine a broad knob. Infraorbital (suborbital) stay broad, and firmly attached to preopercle. One

small postorbital bone. Interorbital ridges divergent anteriorly, close together above midorbit, and meeting posteriorly (Fig. 4). Nasal bone a somewhat flattened tube. Lateral-line pores of head minute, except those on lower jaw. Preopercle with 4 blunt, rugose spines; first largest, more pungent than rest, points almost directly back; second through fourth smaller, decreasing in size ventrally. Opercle with 2 slight ridges, upper ends in a small, weak, blunt spine; dorsal margin inclined about 15° above horizontal. Interopercle without spine. Parietal spine a large, sculptured knob. Pterotic spine a striated, blunt ridge. Posttemporal spine a large, blunt knob. Supracleithral spine a blunt ridge. Cleithrum without spine. Ventral margin of dentary strongly projects medially; symphyseal knob almost absent. Mandibular pores of moderate size, 4 on each side. Angular bone juts ventrally. Mouth strongly upturned. Maxilla extends almost to level of anterior margin of orbit; without cirrus. Teeth on vomer; none on palatines. Gill rakers short, 6~10 total, 1~2 on upper arch, 4~8 on lower arch. No slit behind last hemibranch.

Body slender (greatest body depth 3.0 to 3.7 in SL), sparsely covered with highly modified and reduced scales each enveloped in a soft papilla, some of which are glandular in appearance (only present along anterior part of lateral line in most specimens, including holotype). Lateral line not high on body, with 8~11 tubed scales (9 on left side of holotype), last on caudal fin. Small projections on first 1~3 lateral-line scales only.

Dorsal fin originates over posterior border of eye, first 2 dorsal spines close together, third almost as close; second spine longest; third and succeeding spines diminish in length posteriorly; second and third spines blunt. Dorsal fin membrane at fourth dorsal spine weakly incised. Pectoral rays usually 15, longest (4 to 6 from above) reaches base of second anal soft ray. All fin rays unbranched. Pelvic-fin insertion at base of pectoral fin. Pelvic fin membrane not adnate to body. Caudal fin semilunate, with usually 16 total (8 upper+8 lower) fin-ray elements (holotype with 9 upper+7 lower). Caudal skeleton with parhypural and hypurals 1 and 2 fused, hypurals 3 and 4 fused, hypural 5 autogenous, 2 epurals; preural neural spine long.

Color in life mostly brown, darker above, lighter below with some red. Head and upper body almost black. Irregular blotch of white across cheek (stay), upper preopercle, and subopercle. Underside of head and belly almost white. Distinct scattered spots on sides, brown above and more reddish below. Spots along posterior part of lateral line larger than those elsewhere on body. Dorsal fin almost black, lighter at tips of spines; rays with some spotting; distal parts of middle to posterior soft rays with some red. Anal fin brown. Pectoral fin with red and with spots like those on body; white distally. Caudal fin with broad dark brown bar across base; more distally fin somewhat transparent with some red and scattered brown spots. Pelvic fin white.

Measurements for holotype (percent of standard length in parentheses) are followed by measurements presented as mean of percentage of standard length for all specimens ($n=29$; range in parentheses). Head 12.7(39), 38(35~42). Snout 3.9(12), 11(10~13). Orbit 3.3(10), 9(7~11). Interorbit 2.4(7), 8(6~9). Upper jaw 5.3(16), 15(13~16). Postorbital 5.9(18), 17(16~19). Greatest body depth 11.7(36), 31 (29~33). Anal fin (base of first spine to end of longest ray) 9.7 (30), 35 (30~39). Caudal fin 7.5 (23), 27 (23~31). Pectoral fin 9.6 (30), 30 (25~35). Pelvic fin 5.1 (16), 15 (13~19). Dorsal spine lengths: first 3.2 (9), 13 (10~16); second 4.6 (14), 16 (15~19); third 4.4 (14), 14 (10~16); fourth 3.3 (10), 10 (9~14); fifth 2.8 (9), 8 (6~10); penultimate 2.9 (9), 9 (7~13); last 3.0 (9), 9 (7~12). Anal spine 1.4 (4), 5 (4~7). Width between interorbital ridges 0.6 (2), 2 (1~3). Least depth of caudal peduncle 3.2 (10), 10 (9~12). Distance from tip of snout to first dorsal spine (predorsal length) 7.1 (22), 21 (19~24); to second dorsal spine 8.4 (26), 27 (25~28); to third dorsal spine 9.5 (29), 31 (28~33); to fourth dorsal spine 11.4 (35), 36 (29~39); to fifth dorsal spine 13.2 (41), 41 (37~43). Distance from tip of snout to pelvic origin 10.7 (33), 32 (29~35). Transverse width of first dorsal spine at midlength 0.3 (1), 2 (1~2). Incision of fin membrane at fourth dorsal spine (from tip to membrane) 0.1 (0), 0.6 (0~1). Distance from tip of operculum to dorsal base 2.6 (8), 9 (7~12). Length of uppermost preopercular spine 2.4 (7), 8 (7~9); of anterior

preorbital spine 3.2 (10), 10 (7~11); of posterior preorbital spine 3.5 (11), 11 (10~13).

Remarks. Kamohara (1961) reported a specimen from Kochi City (BSKU 1947) and identified it with some doubt as *K. florida*. This specimen is unusual in having the pelvic fins both I, 1 and slightly different sculpturing of the head spines. The specimen has, however, been long in formalin and attempts to produce a useable radiograph were unsuccessful. Future specimens from Kochi Prefecture should be closely compared with the specimens of *K. florida* presently available.

Two specimens (ZUMT 6375) bear the same data as the holotype and are registered in the catalogue as types. They are not mentioned in the original description. These specimens are likely those mentioned by Tanaka (1918) in his redescription of *K. florida*.

Acknowledgments

Assistance provided the author by a number of colleagues and friends is gratefully acknowledged. I wish to thank Drs. William N. Eschmeyer, California Academy of Sciences, Tamotsu Iwai, Kyoto University, Jorgen Nielsen, Zoologisches Institut und Museum, Copenhagen, Osamu Okamura, Kochi University, and Kaza V. Rama Rao, Zoological Survey of India for providing me the opportunity to examine the specimens used in this study. I thank Dr. Reeve M. Bailey and Walter Rainboth (The University of Michigan), and Dr. William N. Eschmeyer for reviewing the manuscript and Joanne Zupan for editorial assistance. I also thank Susan Karnella of the USNM. Special thanks are due Tetsuji Nakabo and N. Miyabe (Kyoto University) for sending me the fine collections of *K. florida* and kindly providing a color photograph which was used in the description of the color of *K. florida* and Dr. Yoshiaki Tominaga (University of Tokyo) for examination of the holotype, comments on the text, and providing specimens. This work was supported in part by NSF grant DEB 78-26600.

Literature cited

Eschmeyer, W. N. 1969. A systematic review of

the scorpionfishes of the Atlantic ocean (Pisces: Scorpaenidae). Occ. Pap. Calif. Acad. Sci., 79: 1~143, figs. 1~13.

Kamohara, T. 1961. Additional records of marine fishes from Kochi Prefecture, Japan, including one new genus of the paraperid. Rept. Usa Mar. Biol. Sta., 8 (1): 1~8, figs. 1~3.

Kamohara, T. 1964. Revised catalogue of fishes of Kochi Prefecture, Japan. Rept. Usa Mar. Biol. Sta., 11 (1): 1~99, figs. 1~63.

Matsubara, K. 1943. Studies on the scorpaenoid fishes of Japan. Trans. Sigenkagaku Kenkyusyo, (1 and 2): 1~486, figs. 1~156, pls. 1~4.

Matsubara, K. 1955. Fish morphology and hierarchy. Part II. Ishizaki-Shoten, Tokyo, pp. i~v+791~1377, figs. 290~536. (In Japanese).

Poss, S. G. and W. N. Eschmeyer, 1978. Two new Australian velvetfishes, genus *Paraploactis* (Scorpaeniformes: Aploactinidae), with a revision of the genus and comments on the genera and species of the Aploactinidae. Proc. Calif. Acad. Sci., 41 (8): 401~426, figs. 1~14.

Tanaka, S. 1915. Ten new species of fish from Japan. Dobutsugaku Zasshi (Zool. Mag.), Tokyo, 27 (245): 565~568. (In Japanese).

Tanaka, S. 1918. Figures and descriptions of the fishes of Japan including Riukiu Islands, Bonin Islands, Formosa, Kurile Islands, Korea and southern Sakhalin. No. 28. Maruzen Co. Ltd., pp. 498~514, pls. 136~137.

Tanaka, S. 1931. On the distribution of fishes in Japanese waters. J. Fac. Sci. Imp. Univ. Tokyo, Sect. IV. Zool., 3 (1): 1~90, pls. 1~3.

Thompson, J. M. 1967. New species and new records of fish from Queensland. Proc. Linn. Soc. New South Wales, 92 (1): 145~150, 2 figs.

Whitley, G. P. 1952. Some noteworthy fishes from eastern Australia. Proc. Roy. Zool. Soc. New South Wales, 1950~51: 27~32, 5 figs.

(Division of Biological Sciences and Museum of Zoology, The University of Michigan, Ann Arbor, Michigan 48109 U.S.A.)

インドネシア産のハナチゴオコゼ (*Kanekonia*) 属の新種およびハナチゴオコゼの再記載

Stuart G. Poss

インドネシア Halmahera 島で、深さ約 50m のトロール漁で得られたハナチゴオコゼ属の新種 *Kanekonia pelta* を記載した。

模式標本を含む 28 個体に基づき、ハナチゴオコゼ *K. florida* の再記載を行った。